REMARKS

Claims 1-11, 14-19, 21-29, and 31-39 are pending in the present application. In the above amendments, claims 1, 5, 9, 11, 16, 19, 24-26, 28, 29, and 34-37 have been amended; claims 13 and 20 have been canceled without prejudice or disclaimer; and new claims 38 and 39 have been added.

In the Office Action mailed on March 9, 2004, the Examiner rejected claims 1-4, 7, 16-19, and 21 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 5,881,363 to Ghosh *et al.* ("Ghosh" hereinafter) in view of U.S. Patent Number 6,621,808 to Sadri ("Sadri" hereinafter). The Examiner also rejected claims 1, 5, 6, 8, 11, 13-16, 20, 22-26, 29, and 31-33 under 35 U.S.C. §103(a) as being unpatentable over Zhou *et al.*, SEMI-BLIND CHANNEL ESTIMATION FOR BLOCK PRECODED SPACE-TIME OFDM TRANSMISSIONS, *Proc. of the 11th IEEE Workshop on Stat. Signal Proc.*, 381-84 ("Zhou" hereinafter) in view of Sadri.[1] The Examiner further rejected claims 11, 29, and 34-37 under 35 U.S.C. §103(a) as being unpatentable over European Patent Application Number EP 1063784, by Saito ("Saito" hereinafter). Finally, the Examiner rejected claims 9, 10, 27, and 28 under the same statute as being unpatentable over Ghosh in view of Sadri and in further view of U.S. Patent Number 4,995,057 to Chung ("Chung").

Applicant respectfully responds to this Office Action.

Independent claim 1 has been amended to recite that the step of pre-coding the first data comprises pre-coding dedicated pilot data. This limitation was formerly recited in claim 5. Scope of the amended claim 5 is believed to be the same as its scope prior to the current amendment.

As amended, independent claim 1 now recites (1) transmitting pre-coded first data, which includes pre-coded dedicated pilot data, and (2) transmitting non pre-coded first reference data on a common pilot signal. It appears that neither Ghosh nor Sadri teaches or suggests transmitting both kinds of pilot or reference data, as claim 1 now recites.

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[1] The Office Action cites "Sadri ('431)" as the relevant document. Because we have not been able to identify a U.S. Patent Document naming Sadri as an inventor and having a serial number ending in "431," and because of the similarity of the references to "Sadri '431" and the references to U.S. Patent Number 6,621,808, it appears that the

Turning next to the rejection of claim 1 and claim 5 (which claim 5 included the newly-added limitation of claim 1) as unpatentable over Zhou in view of Sadri, the Office Action acknowledges that Zhou does not disclose the non pre-coded first reference data on a common pilot signal, wherein the common pilot signal is sent on a separate channel. The Office Action seeks to import such limitations from Sadri "in order to facilitate re-generation of the carrier in the receiver and [allow] user carriers to share the common pilot signal for carrier phase reference." The Office Action, however, does not indicate the source of another limitation present in the amended claim 1: transmitting both pre-coded dedicated pilot data and non pre-coded first reference data. In fact, Zhou teaches inserting pre-coding pilots before or after the pre-coder, in the alternative:

> We here focus on pre-precoding pilots where the known symbols are inserted before precoding by Ξ; alternatively, known symbols can be inserted after precoding and we will call them post-precoding pilots [9].

Zhou, at 383 (left column, immediately following the Resolving Scalar Ambiguities section heading) (emphasis added). Thus, Zhou appears to be teaching away from combining pre-coded dedicated pilot data with non pre-coded reference data.

We respectfully submit that Zhou and Sadri do not teach or suggest transmitting both pre-coded dedicated pilot data and non pre-coded reference data.

Independent claims 16, 34, and 36, as amended, recite apparatus elements for transmitting both pre-coded and non pre-coded reference data. We respectfully submit that these claims are patentable for the reasons explained above in relation to claim 1.

Independent claims 11, 29, 35, and 37, as amended, are directed to method and apparatus for demodulating pre-coded data. Each of these claims recites receiving or accepting both pre-coded and non pre-coded reference data, and determining demodulator parameters in accordance with both pre-coded and non pre-coded reference data. It appears that none of the references of record, taken alone or as a group, teaches or suggests the combined use of both pre-coded and non pre-coded reference data in demodulating the pre-coded data.

"'431" designation is a typographical error. We therefore treat all references to Sadri as references to U.S. Patent Number 6,621,808.

For the reasons discussed above, we respectfully submit that all independent claims are patentable.

Finally, we address the motivation to combine the various references offered by the Office Action in rejecting the claims as they stood before the current amendment. The Patent and Trademark Office has the burden of making a *prima facie* case of obviousness. *E.g., In re Mayne*, 104 F.3d 1339, 1342 (Fed. Cir. 1997); MANUAL OF PATENT EXAMINING PROCEDURE §2142 (8th ed., rev. 1, Feb. 2003) ("MPEP" hereinafter). For a *prima facie* case of obviousness, the prior art must suggest the combination or method claimed and reveal a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991); MPEP §2142 & 2143. "Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure." *In re Vaeck*, 947 F.2d at 493; *see also* MPEP §§2143.01 & 2143.02. Here, the Office Action does not explain where the offered rationales for the various combinations can be found in the prior art. The Office Action also does not explain what prior art reveals reasonable expectations of success of the various combinations. We have examined the references, but have not identified the suggestions to combine as stated in the Office Action. If the Examiner believes that each of the offered suggestions to combine is so well known that Official Notice can be taken of the underlying facts, we respectfully traverse the assertion of Official Notice. *See* MPEP §2144.03(C). For this reason, we respectfully submit that a *prima facie* case of obviousness has not been made.

New claims 38 and 39 have been added to claim additional aspects of the invention. We believe that the new claims are patentable because the references of record do not disclose or suggest the combinations of steps as recited in these claims.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

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By: _____

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